**Geometry Semester 1 Study Guide**

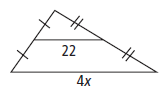
**Study guide for semester exam. Note: this guide will mainly tell you which topics are covered. Individual problems can be found in MathXL (a practice test will be available). Use your quizzes and MathXL as your main study tools! Since we just completed chapter 5 it is not in this guide. Just use the quiz as a study guide for those topics. Also, just because an example problem is not in this document does not mean it can’t show up on the exam. The exam will be multiple choice (scantron) and short answer/proofs.**

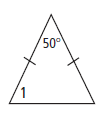
**Topics**

* Congruency: What does it mean? How do we determine congruency for triangles? (The five shortcuts!) How and when is CPCTC used?
* Parallel and perpendicular lines. How are they identified (slope!). What are their properties? What happens when you cut parallel lines with a transversal?
* Trigonometry: What are trig ratios? What is an inverse trig function? What are the properties of the special right triangles 30-60-90 and 45-45-90?
* Angles of elevation and depression. What are they? How are problems set up and solved? Does the height of the observer matter?
* Triangles: What kind of triangles are there? Are their side lengths that can’t be formed into triangles? What are the properties of angles in triangles? What are interior and exterior angles? What are the properties of equilateral and isosceles triangles?
* What are the formulas for area and perimeter (circumference) for triangles, squares, circles and prisms?
* What are the properties of lines, line segments and rays? What is a midpoint? How do we determine slope and distance?
* What are the properties of triangles, quadrangles, parallelograms, circles and prisms?
* Proofs! Use your past quizzes to study from.
* Vocab! Any vocabulary from chapters 1, 3, 4, 5 and 8 might appear.

Sample problems (there are more on MathXL):

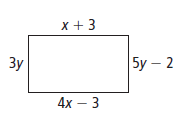
1. Which line is perpendicular to ?
2. 
3. 
4. 
5. 
6. Which side lengths would not make a triangle?
7. 4,3,7
8. 3,8,6
9. 2,4,5
10. 4,6,9



1. What is the value of x in the figure at the right?
2. 5.5
3. 11
4. 22
5. 44
6. A circular copper decoration has a diameter of 2in. How much more area would a circular decoration with a diameter of 6in. have?
7. 8π in.2
8. 10π in.2
9. 32π in.2
10. 40π in.2
11.  What is *m*∠1 in the triangle at the right?
12. 50°
13. 55°
14. 60°
15. 65°
16. I don’t know.



1. What is the length of  if *LN* = 42?
2. What is the midpoint of a segment with endpoints at (24, 3) and (2, 5)?
3. What is the slope of a line that passes through at (21, 5) and (4, 5)?
4. What are the values of x and y for which quadrilateral ABCD is a parallelogram? Explain.



1. Give lines *k* and *j* and transverse line *m*, what must the value of *x* be for lines *k* and *j* to be parallel?

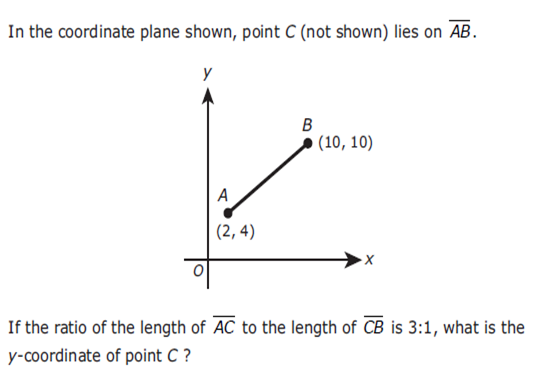
8X – 4

4X + 7

*k*

*j*

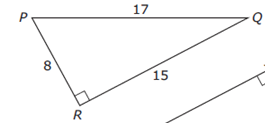
*m*

1. 

What is the slope of AB?

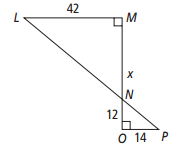
What is the midpoint of AB?

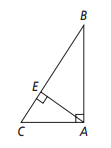
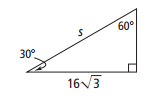
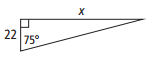
What is the equation of the line that passes through AB?

1. Refer to the figure at the right.

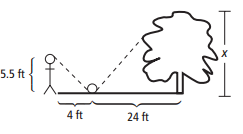
What are the trig ratios for vertices

P and Q?

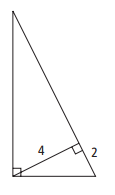


1. OP || LM. What is the value of x?
2. 36
3. 20
4. 25
5. 28 1/3
6. Which segment of the hypotenuse is adjacent to ?
7. 
8. 
9. 
10. 
11. What is the value of s?
12. 8
13. 16
14. 
15. 32
16. What is the value of sin *N*?
17. 
18. 
19. 
20. 
21. What is the value of x to the nearest tenth?

1. 5.7
2. 21.2
3. 30.3
4. 82.1

**Short answers.** **For exercises 18 – 22, explain how you got your answer.**

1. Irene places a mirror on the ground 24 ft from the base of an oak tree. She walks backward until she can see the top of the tree in the middle of the mirror. At that point, Irene’s eyes are 5.5 ft above the ground, and her feet are 4 ft from the mirror. How tall is the oak tree? Explain.



1. What is the perimeter of the large triangle shown at the right?

Show your work.

1. A 12-ft-long ladder is leaning against a wall and makes an 80° angle with the ground. How high up the wall does the ladder reach, and how far is the base of the ladder from the base of the wall? Round to the nearest inch.
2. Two buildings stand 90 ft apart at their closest points. At those points, the angle of depression from the top of the taller building to the top of the shorter building is 12°. How much taller is the taller building? Draw a diagram to support your answer.
3. What are the five shortcuts for establishing congruency in triangles? What do you need to implement them/use them in proofs? (That is, what to the letters SSS, HL, etc. mean?)